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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,857	01/05/2001	Chien-Meen Hwang	E0869	3692

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EXAMINER

PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/755,857

Applicant(s)

HWANG ET AL.

Examiner

Sudhanshu C. Pathak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on January 5<sup>th</sup>, 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on January 5<sup>th</sup>, 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Claims 1-to-22 are pending in the application.

***Claim Objections***

2. Claim 22 is objected to because of the following informalities:

Claim 22 is a dependent claim dependent to claim "217", which does not exist, and is recommended to be written as "21". Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 (apparatus) & 12-13 (method), are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lin (6,057,789).

Regarding to Claims 1 & 12, the Applicant Admitted Prior Art (AAPA) discloses a network receiver for recovering a frame of data transmitted on a network medium (Specification, Page 1, lines 12-26), the receiver comprising a circuit utilizing a training sequence portion of the data frame for calculating the receiver parameters useful for recovering the transmitted data (Specification, Page 2, lines 5-22). However the AAPA does not disclose the receiver further comprising a buffer circuit storing the data at a first data rate and releasing the data at a second data rate,

slower than the first data rate to effectively reduce the data rate input to the receiver circuit.

Lin discloses a buffer circuit storing the data at a first data rate and releasing the data at a second data rate (Abstract, lines 1-7 & Column 1, lines 14-18, 43-58 & Column 3, lines 25-40 & Column 5, lines 30-56 & Column 7, lines 5-14 & Fig. 2-7). Lin discloses varying the sample rate converter parameters to increase or decrease the data rate of the output data compared to the input data rate (Column 1, lines 43-58 & Column 2, lines 12-38 & Column 5, lines 30-56 & Column 6, lines 10-27 & Column 7, lines 5-52 & Fig. 2-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that implementing the sample rate converter as described in Lin in the receiver as described in AAPA reduces the complexity and cost of the digital receiver and can further be integrated on a larger system chip receiver.

Regarding to Claims 2 & 13, the Applicant Admitted Prior Art (AAPA) in view of Lin discloses a receiver comprising a sample rate converter further comprising a buffer circuit as described above. The AAPA further discloses the network receiver wherein the receiver is an equalizer utilizing a complex finite impulse response filter to recover transmitted data and the receiver parameters are coefficients for the filter (Specification, Page 2, lines 5-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA in view of Lin satisfies the limitations of claim.

5. Claims 3 (apparatus) & 14 (method), are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lin (6,057,789) in further view of Fertner (5,742,642).

Regarding to Claims 3 & 14, the Applicant Admitted Prior Art (AAPA) in view of Lin discloses a receiver comprising a sample rate converter, to increase or decrease the data rate of the output data compared to the input data rate, further comprising a buffer circuit as described above. However, AAPA in view of Lin does not disclose an A/D converter (ADC) to sample the modulated carrier and generate a sequence of samples representing the modulated carrier.

Fertner discloses a digital receiver for use in a network communications system (Fig. 3-4). Fertner further discloses the receiver comprising an analog-to-digital converter (ADC) for sampling a modulated carrier and generating a sequence of sample values representing the modulated carrier (Fig. 4, element 48 & Column 6, lines 15-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the ADC as described in Fertner can be implemented in the digital receiver as described in AAPA in view of Lin so as to convert the data transmitted into the digital domain to process and recover the transmitted data with minimal errors caused in the transmission medium.

6. Claims 4, 8 (apparatus) & 15, 19 (method), are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lin (6,057,789) in further view of Fertner (5,742,642) in further view of Tice (6,222,456).

Regarding to Claims 4, 8 & 15, 19, the Applicant Admitted Prior Art (AAPA) in view of Lin in further view of Fertner discloses a receiver comprising an A/D converter; a sample rate converter, to increase or decrease the data rate of the output data compared to the input data rate, further comprising a buffer circuit as described above. However, AAPA in view of Lin in further view of Fertner does not disclose varying the sampling rate depending on the training sequence of the frame or the data portion of the frame.

Tice discloses a detector with a variable sample rate, wherein the detector detects a predetermined profile from the incoming signal using pattern recognition techniques and then varying the sample rate accordingly (Abstract, lines 1-15). Tice further discloses a programmable processor comprising pattern recognition instructions for detecting the presence of a predetermined profile (Abstract, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Tice teaches that depending on a predetermined sequence of the incoming signal and varying the sampling rate in response to the detected pattern and can be implemented in the receiver as described in AAPA in view of Lin in further view of Fertner and the parameters of the sample rate converter can be varied to a predetermined sampling frequency in response to the incoming data pattern. Furthermore, there is no criticality in increasing and decreasing the output sampling frequency of the sample rate converter depending on the type of data is a matter of design choice.

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7. Claims 5-6, 9-10 (apparatus) & 16-17, 20-21 (method), are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lin (6,057,789) in further view of Fertner (5,742,642) in further view of Tice (6,222,456) in further view of Liu et al. (6,222,891).

Regarding to Claims 5-6, 9-10 & 16-17, 20-21, the Applicant Admitted Prior Art (AAPA) in view of Lin in further view of Fertner in further view of Tice discloses a receiver comprising an A/D converter; and a sample rate converter, to increase or decrease the data rate of the output data compared to the input data rate depending on the data received, further comprising a buffer circuit as described above.

However, AAPA in view of Lin in further view of Fertner in further view of Tice does not disclose the receiver comprising a complex mixer receiving the sample values from the A/D converter and generating a sequence of sample values representing an I channel and Q channel data wherein the data transmitted on the network medium utilizing quadrature amplitude modulation (QAM).

Liu discloses a receiver used for receiving digitally modulated signals, using multiple modulation techniques including quadrature amplitude modulation (QAM) (Column 1, lines 50-59, 65-67 & Column 2, lines 3-7 & Column 4, lines 55-65). Liu further discloses the receiver comprising a complex mixer receiving the sample values from the A/D converter and generating a sequence of sample values representing an I-channel data signal and a sequence of sample values representing a Q-channel data (Fig. 1, element 18 & Column 5, lines 20-33, 46-67 & Column 8, lines 25-33). Therefore, it would have been obvious to one of ordinary skill in the art

at the time of the invention that Liu teaches implementing a complex mixer so as to process, receive and demodulate quadrature amplitude modulated transmitted signals, thus satisfying the limitations of the claims.

8. Claims 7, 11 (apparatus) & 18, 22 (method), are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lin (6,057,789) in further view of Fertner (5,742,642) in further view of Tice (6,222,456) in further view of Liu et al. (6,222,891) in further view of Duan (6,000,834).

Regarding to Claims 7, 11 & 18, 22, the Applicant Admitted Prior Art (AAPA) in view of Lin in further view of Fertner in further view of Tice in further view of Liu discloses a receiver to receive a quadrature amplitude modulated transmitted signal comprising an A/D converter; a complex mixer; and a sample rate converter, to increase or decrease the data rate of the output data compared to the input data rate depending on the data received, further comprising a buffer circuit as described above. However, the references do not disclose a decimation filter to further reduce the sample frequency.

Duan discloses a decimation filter to reduce the sample frequency (Fig. 2, element 32 & Column 1, lines 64-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Duan teaches implementing a decimation filter to reduce the sample frequency of the incoming samples to provide a more accurate sampled data and this filter can be implemented after the



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sample rate converter to further reduce the sample frequency, thus satisfying the limitations of the claim.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (703) 305-0341. The examiner can normally be reached (Monday-Friday from 8:30 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C. 20231

Or faxed to: -

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to:

Crystal Part II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

  
**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINEE**  
**TECHNOLOGY CENTER 2600**

**Notice of References Cited**

Application/Control No.

09/755,857

Applicant(s)/Patent Under  
Reexamination  
HWANG ET AL.

Examiner

Sudhanshu C. Pathak

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**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
/	A	US-6,057,789	05-2000	Lin, Tao	341/61
/	B	US-6,222,456	04-2001	Tice, Lee D.	340/630
/	C	US-5,742,642	04-1998	Fertner, Antoni	375/233
/	D	US-6,222,891	04-2001	Liu et al.	375/326
/	E	US-6,000,834	12-1999	Duan, Tieying	708/313
/	F	US-5,331,346	07-1994	Shields et al.	348/441
/	G	US-6,252,919	06-2001	Lin, Tao	375/377
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
/	U	A. Anttonen et al.; Performance and complexity analysis for Adaptive Sample Rate Converters in GSM/UMTS/HIPERLAN2 Mobile Transceiver; IEEE Transactions on Communications; Pg. 489-498.
/	V	T. Kwan et al.; A Stereo Asynchronous Sample-Rate Converter for Digital Audio; Symposium on VLSI Circuits; 1993 Digest of Technical Papers; May 19-21, 1993; Pg. 39-40.
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

